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THE PLANT DISEASE BULLETIN

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The Plant Disease Survey

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THE PLANT DISEASE BULLETIN

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THE PLANT DISEASE SURVEY

Vol. III Number 3

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BARLEY

Stripe caused by Helminthosporium gramineum.

Iowa: (Bakke and Cromwell.) General wherever barley is grown. One field observed with 25-35% stripe by actual count, and another field with from 10-15%.

Michigan: (Coons, July 1.) Stripe is more severe in seedling stage than ever before noticed. Whole fields reported severely injured.

Texas: (Summary of Cereal Disease Survey, May 13-30.) Found in seven out of twenty-one counties surveyed in amounts ranging from slight to considerable. Apparently most abundant in Wichita County.

Net blotch caused by Helminthosporium teres.

Iowa: (Bakke, July 1.) Common but damage so far slight.

Michigan: (Coons, July 1.) Exceptionally prevalent and killing whole leaf blades.

Texas: (Summary of Cereal Disease Survey, May 13-30.) One case found in the 21 fields of barley inspected.

Covered smut caused by Ustilago hordei.

Alabama: (Summary of Cereal Disease Survey, May 13-28.) Found in both of the two barley fields inspected. In one case a trace was present and in the other case 2%.

Iowa: (Bakke, July 1.) General wherever barley is grown.

Texas: (Summary of Cereal Disease Survey, May 13-30.) Found in 17 out of 21 fields inspected in amounts ranging from a trace to 60% (average 7.9%). Formaldehyde treatment in all cases successful.

Loose smut caused by Ustilago nuda.

Alabama: (Summary of Cereal Disease Survey, May 13-28.) A trace found in one field.

Texas: (Summary of Cereal Disease Survey, May 13-30.) Found in 8 out of the 21 fields inspected in amounts ranging from a trace to 65% (average 3.8%).

Spot blotch caused by Helminthosporium sativum.

Iowa: (Bakke, June 19.) Damage slight so far.

Texas: (Summary of Cereal Disease Survey, May 13-30.) Found in 11 out of 21 fields inspected. Damage varying from slight to severe.

Scab caused by Fusarium sp.

Iowa: (Bakke, June 28.) Doing considerable damage in northern part of state.

OATS

Smut caused by Ustilago avenae and U. levis.

Alabama: (Peltier, June 15.) Smut not so serious as last year, due in part to the control work carried on last fall.

(Summary of Cereal Disease Survey, May 13-28.) Loose smut was found in 88 fields out of the 113 inspected, in amounts ranging from a trace to 20% (average 1.6%). Found most frequently in Tuscaloosa County. 77% of the 35 fields sown with Fulghum and 79% of the 44 fields sown with Texas Rust Proof were infested. Of the 14 fields sown with seed treated with Formaldehyde 1-40 and Copper Sulphate, 2 fields of Fulghum and 7 of Texas Rust Proof were infested. 99 fields were untreated.

Covered smut was found in 61 out of the 113 fields inspected in amounts ranging from a trace to 42% (average.8%). Found most frequently and in largest amounts in Tuscaloosa County. 17% of the 35 fields sown to Fulghum oats, and 70% of those sown to Texas Red Rust Proof were infested. 14 of the 113 fields were treated, 13 with Formaldehyde 1-40 and one with Copper Sulphate. Of the 14 treated fields, seven cases of infection ranging from a trace to 4.2% occurred.

Arkansas: (Elliott, July 15.) 10% loss possibly. Some very bad, 20-30%.

Colorado: (Leach, July 15.) Usually present in small quantities to 5% where seed is not treated.

Delaware: (LeCato, June.) General, about 4% loss.

Georgia: (Summary of Cereal Disease Survey, May 14-27.) Loose smut found in 22 out of the 23 fields inspected in amounts ranging from a trace to 12% (average 3.2%). Found most frequently in Early County but in highest percent in Thomas and Carroll Counties. 92% of the 13 fields of Fulghum oats and 100% of the 3 fields of Texas Rust Proof oats were affected. Out of the 23 fields inspected, 12 were planted with seed treated with the dry formaldehyde treatmentand 11 were untreated. In the untreated fields infection ranged from 2-12%; in treated fields from a trace to 1%.

Covered smut was found in 4 out of the 23 fields inspected, 2% in each case. Found most frequently in Thomas County.

Florida: (Stevens, June 15.) No reports of serious injury from smut. Prevalent to some extent in most fields.

Kansas: (Melchers, July 15.) Slightly less than usual. Probably due to seed treatment. Oat seed treatments have given satisfactory results. Farmers take to it.

Louisiana: (Edgerton, June 15.) About the same as usual. The infection has been very heavy in fields grown from oats shipped in from other states, especially Texas. The infection on oats grown from local seed has been comparatively light.

Mississippi: (Beal, June 15.) General over the state. Probably both species present, but no attempt made to distinguish between them.

Oregon: (Barss, July 15.) U. avenae has been found again this year running as high as 7-8%. Few records are in. Probably general but not usually serious as seed treatment is practiced everywhere.

Tennessee: (Essary, July 15.) Very common on winter oats. Loss estimated 10-15%.

Texas: (Summary of Cereal Disease Survey, May 13-30.) Loose smut found in 138 out of the 177 fields inspected in amounts ranging from a trace to 30% (average 4.8%). Found in largest amounts in Hays County. 78% of the 142 fields sown to Texas Rust Proof and 71% of the 7 fields sown to Furguson oats were infected. 54% or 13 out of the 24 fields sown with grain treated with formaldehyde wet or dry were infected in amounts ranging from a trace to 20% and 75% or 115 out of the 150 fields untreated were infested ranging from a trace to 30%.

Covered smut found in 67 out of the 177 fields inspected in amounts ranging from a trace to 24% (average 1.3%). Found most frequently in Hopkins and Lamar Counties. 42% of the 142 fields of Texas Rust Proof and 28% of the 7 fields of Furguson oats were infected. 28% or 7 out of the 24 fields treated with formaldehyde wet or dry were infested in amounts ranging from a trace to 1% and 39% or 60 out of the 153 untreated fields were infested, ranging from a trace to 24%.

(Taubenhaus, June 15.) Probably both present, made no careful study of same. 10% loss.

West Virginia: (Giddings, July 15.) Quite prevalent in Hardy County and causing probably 10% injury. Also found to a less extent in Berkeley, Jefferson, Preston and Monongalia Counties.

Leaf rust caused by Puccinia coronata.

Alabama: (Peltier, June 15.) Very abundant this season, ranging from 5 and 10% to 100%. Oats maturing medium early seem to be best for rust escaping according to the experimental trial plots. On these plots late oats were affected worse, but some of the hybrids gave considerable promise.

(Summary of Cereal Disease Survey, May 13-28.) Found in 18 out of the 113 fields inspected, in amounts ranging from a trace to 40% (average 1.7%). 6% of the 35 fields sown to Fulghum and 23% of the 44 fields of Texas Rust Proof oats were infected.

Arkansas: (Elliott, July 15.) Serious, 5% loss.

Georgia: (Summary of Cereal Disease Survey, May 14-27.) Found in 22 out of the 23 fields inspected, in amounts ranging from 10-65% of the affected leaf area (average 23.6%). Found in all fields inspected in all counties except in one field of Texas Rust Proof in Carroll County.

Illinois: (Cromwell, May 30.) One half acre of a late planted field in Antioch was so badly affected with rust that it will be almost a total loss. An old planting of Rhamnus cathartica was within a few rods and showed aecia.

Kansas: (Melchers, July 15.) Occurred somewhat late, but quite common over the state. No damage will result.

Louisiana: (Edgerton, June 15.* Infection about the same as usual. Some fields have shown considerable of this rust but the loss is probably small. Only rust-resistant oats are grown but these are far from being totally resistant.

Tennessee: (Essary, July 15.) Common. Heavy infection on winter and spring varieties.

Texas: (Summary of Cereal Disease Survey, May 13-30.) Found in 140 out of the 177 fields inspected in amounts ranging from 1/2 to 65% (average 11.3%). Found in all counties inspected, excepting Archer, Wise and

Gillespie. 84% of the 142 fields sown with Texas Rust Proof and 71% of the 7 fields sown with Furguson oats were infested.

Stem rust caused by Puccinia graminis.

Georgia: (Summary of Cereal Disease Survey, May 14-27.) Found in two out of the 23 fields inspected, in each case to the amount of 40%. Both infested fields were found in Early County.
Kansas: (Melchers, July 15.) Traces found in many fields.
Texas: (Summary of Cereal Disease Survey, May 13-30.) Found in 44 out of the 177 fields inspected in amounts ranging from a trace to 65% (average 1.8%). Found most frequently in Hays County but in largest amounts in Denton County. 29% of the 142 fields sown with Texas Rust Proof showed rust and no cases of infection were found in the 7 fields sown with Furguson oats.

Blast cause undetermined.

Alabama: (Summary of Cereal Disease Survey, May 13-28.) Found in 40 out of the 113 fields inspected, in amounts ranging from very slight to abundant. 28% of the 35 fields of Fulghum and 36% of the 44 fields sown with Texas Rust Proof Oats were infected.
Georgia: (Summary of Cereal Disease Survey, May 14-27.) Found in 6 out of the 23 fields inspected in amounts ranging from very slight to moderate.
Texas: (Summary of Cereal Disease Survey, May 13-30.) Found in 110 out of the 177 fields inspected in amounts ranging from a trace to very abundant. Found most frequently in Hays and Kendall Counties. 69% of the 142 fields of Texas Rust Proof and 57% of the Furguson oats were infected.

Blade blight caused by Bacteria.

Delaware: (LeCato, June.) Moderate, but probably reducing yield by about 6%.
New York: Common on Long Island.

Other diseases.

A disease or condition is affecting oats in Missouri so that many leaves turn yellow and purple, and later die.

Halo leaf spot caused by bacteria is general but not destructive in parts of Iowa.

Anthracnose caused by Colletotrichum cereale was reported from 12 oat fields in Alabama as very slight or slight.

A bacterial blight of oats is reported from Texas by scouts of the Cereal Disease Survey. This was found in 32 fields out of 177 inspected, in amounts ranging from very slight to severe.

A blade blight, cause not given, is common throughout Alabama. Reports show the presence of from a trace to 10%.

Hot, dry weather from June 1 on, in Michigan, caused severe injury to oats. The blades turned yellow and red leaf followed on older leaves.

RYE

Anthracnose caused by Colletotrichum cereale.

Alabama: (Summary of Cereal Disease Survey, May 13-28.) Found in 15 out of

the 18 fields inspected, in amounts ranging from very slight to 50%. 12 out of the 14 fields of Albruzzi rye were found infected.

Iowa: (Bakke, July 1.) Common throughout the state. Very severe at Danville, a probable reduction of 15% in the yield. First collected at Vinton, June 5.

Kentucky: (Miss Roe, July 15.) Reported as abundant in McCracken County, and 15% in Calloway County, causing a loss of 1%.

Ohio: (Detmers, July 15.) Infection severe in Mahoning County. No general observations made.

Virginia: (Fromme, July 1.) Severe in the southern section of the state and at least a trace throughout the state.

Ergot caused by Claviceps purpurea.

Georgia: (Berry, July 1.) A trace reported from southern Georgia; also a very slight case in Bibb County.

Illinois: (Anderson, July 15.) Ergot does not seem to be so abundant as last year but I have observed sixty percent infection in fields where volunteer rye has appeared in clover and wheat.

Iowa: (Bakke, July 1.) There is not nearly so much ergot as there was a year ago. First collected at Vinton June 5.

Ohio: (Detmers, July 15.) Rather severe in one field in Sandusky County. Noted occasionally over state.

Pennsylvania: (Orton, July 15.) Found in one field at State College, 2% of the heads infected.

West Virginia: (Giddings, July 15.) Specimens collected in Monongalia County and about 5% of heads infected in the field examined.

Wisconsin: (Vaughan, July 15.) More ergot than for several years. One field in Outagamie County showed 95% of the plants with one or several sclerotia to the head.

Leaf rust caused by Puccinia dispersa.

Alabama: (Summary of Cereal Disease Survey, May 13-28.) Found in 11 out of the 18 fields inspected, ranging from a trace to 65% (average 11.5%). 9 out of the 11 fields of Albruzzi rye were infected.

Colorado: (Leach, July 15.) A trace reported from Rocky Ford, June 10, and 3% on June 20. 5% reported from Holly on June 17.

Georgia: (Berry, July 1.) 25-75% infection over the state.

Illinois: (Anderson, July 15.) Leaf rust on rye is the worst I have ever seen it in this state. There was one hundred percent infection early in the season and a great many of the leaves were dead before the heads were filled out.

Iowa: (Bakke, July 1.) General throughout state. First reported from Rembrandt, June 4.

Kansas: (Melchers, July 15.) Quite common on foliage.

Kentucky: (Miss Roe, July 15.) 10% reported from Calloway County and 25% from Daviess County.

Pennsylvania: (Orton, July 15.) Prevalent in most places, not severe.

Tennessee: (Essary, July 1.) Very common, Heavy infection, causing a light yield.

Texas: (Summary of Cereal Disease Survey, May 13-30.) Found in 2 out of the 3 fields inspected, 10% and 35%.

Virginia: (Fromme, July 1.) Rather common, damage uncertain.

Wisconsin: (Vaughan, July 15.) Very little noted thus far.

Stem rust caused by Puccinia graminis.

Georgia: (Summary of Cereal Disease Survey, May 15-21.) Found, out of the three fields inspected, a case of 10% in Mitchell County.
(Berry, July 1.) But a trace reported from south Georgia.
Illinois: (Anderson, July 15.) Very little stem rust has appeared on the rye in central Illinois, due probably to the early ripening of the crop.
Kansas: (Melchers, July 15.) Observed only in traces.
Pennsylvania: (Orton, July 15.) Found most prevalent in Lancaster and Franklin Counties. Infection in most cases not severe.
Texas: (Summary of Cereal Disease Survey, May 15-22.) One case of infection, 24%, found in Wichita County. Three fields inspected.
West Virginia: (Giddings, July 15.) Observed on rye in Hardy County. Not destructive and rye not an important crop.
Wisconsin: (Vaughan, July 15.) Small amount noted at Madison. No report from outside.

Other diseases.

Scab, caused by Fusarium, is reported as common in Iowa. Where rye is heavy there is a large amount of scab. First observed at Danville, June 13.

Septoria, caused by Septoria secalina, is reported from Texas as very slight in one of the three fields inspected.

Broken stem, caused by Mycosphaerella sp., is reported as most severe in Sandusky County, Ohio. Yield reduced about 3% by failure of development of heads.

WHEAT

Scab caused by Fusarium spp.

Alabama: (Summary of Cereal Disease Survey, May 13-28.) Found in 13 out of the 133 fields inspected, in amounts ranging from very slight to 5%.
(Peltier, July 1.) A trace of scab was found on the station farm. No reports of scab were received from the south half of the state. Scattering reports have been received from the north half of the state. Increasing in severity in Lauderdale County.
Arkansas: (Elliott, July 1.) Very little, no damage.
Colorado: (Leach, July 15.) None observed or reported to date. The season has been unusually dry.
Delaware: (LeCato, June.) Local and causing slight damage, 1% reduction in yield.
Georgia: (Berry, July 1.) Quite common this season, especially when wheat follows corn in rotation. From a trace to 2% all over the state.
(Summary of Cereal Disease Survey, May 15-21.) Found in 23 out of the 39 fields inspected, in amounts ranging from a trace to 10% (average .8%). 72% of the 25 fields of Mediterranean Blue Stem and 44% of the 9 fields of May wheat were infested.
Illinois: (Anderson, July 15.) County agents report wheat scab as unusually severe. I have made few observations myself, but where seen, the scab has appeared about the same as last year. I believe the county agents are getting more familiar with it, and for this reason they note its abundance.
Indiana: (Gardner, July 15.) Most serious wheat disease in Indiana, and has been reported from all parts of the state. Infection varied from 0-100%, and the yield was greatly reduced in many cases.

Iowa: (Bakke, July 15.) Very common throughout the state. Most destructive disease of wheat in state. First observed at Muscatine June 16.

Kansas: (Melchers, July 15.) Occurred in small amounts in many fields. No damage.

Kentucky: (Miss Roe, July 1.) Disease has been generally reported from all over the state in amounts varying from a trace to as high as 60% affected heads.

Ohio: (Selby, July 15.) Generally severe especially in western and northern Ohio and where wheat followed corn, maximum percent of head attack 80%, low percentages in southeast. Estimated maximum loss in yield scarcely exceeds 33%.

Pennsylvania: (Orton, July 15.) Franklin County reports scab prevalent in fields where wheat follows corn. Also known to exist in Adams and Centre Counties. The loss will average about 3% I think.

South Dakota: (Champlin, July 5.) Reported developing to an alarming extent in the vicinity of Lake Andes, particularly on Marquis wheat.

Tennessee: (Essary, July 1.) Heaviest infection known. Serious damage. Loss estimated 10-90%.

Texas: (Taubenhaus, July 1.) Prevalent, 2% loss.

Virginia: (Fromme, July 1.) Again severe in mountain section of southwest, also reported as considerable from valley (Rockingham County) and from Fauquier County. Very little in southern and eastern sections. One field with 50% infected heads examined in Pulaski County, corn had preceeded.

West Virginia: (Giddings, July 17.) This is, I believe, the most serious disease of wheat in West Virginia. Last year it was very prevalent and the wheat was refused at some mills on account of the scab infected grain. This year it is quite generally reported and is likely to be as destructive as it was last year.

(Berg, July 14.) Severe in some of the low-lying fields on the Ohio River bottom lands in Pleasant County, as high as 85% of the heads were affected. More or less abundant in nine other counties.

Wisconsin: (Vaughan, July 15.) Marquis wheat in Rock County showed 95% of the plants infected. Some of the fields almost entirely gone. Reported from five other counties.

Bunt caused by Tilletia laevis and T. tritici.

Alabama: (Summary of Cereal Disease Survey, May 12-28.) Found in 33 out of the 133 fields inspected, in amounts ranging from a trace to 20% (average .7%). 21% out of the 93 fields of Mediterranean Blue Stem and 33 1/3% of the 9 fields of Fulcaster were infested. Out of the 133 fields inspected 36 were sown to seed which had been treated with formaldehyde, 1-40, and 32 with seed which had been treated with Copper Sulphate. Four cases of bunt ranging from a trace to 2% were found in the 36 fields treated with formaldehyde, 1-40, and one field containing a trace was found in the 32 fields treated with Copper Sulphate.

Arkansas: (Elliott, July 1.) Much less severe than last year. Formaldehyde treatment becoming general on account of campaign. About 2% of the total crop a loss.

Delaware: (LeCato, June.) Moderate and general, caused a reduction in yield for state of about 3%.

Georgia: (Berry, July 1.) From a trace to as high as 60% all over the state. Treated seed nearly free. Untreated, apparently healthy seed, resulted in as high as 60% loss.

(Summary of Cereal Disease Survey, May 15-21.) Found in 10 fields out of the 39 inspected. Fields showed amounts ranging from a trace to

60% (average 2%). 20% of the 25 fields of Mediterranean Blue Stem and 33 1/3% of the 9 fields of May wheat were affected. Out of the 39 fields, the seed used in 6 of them was treated with Copper Sulphate, 16 with formaldehyde, 1-40, 2 with hot water, and 15 was untreated. 8 cases of infection were found in the untreated fields and 2 cases, one a trace and one 1/2%, in a field sown with grain treated with formaldehyde, 1-40.

Indiana: (Gardner, July 15.) General in the state, altho the majority of farmers had treated their seed. From present indications it seems that many farmers will be docked for smutty grain this year.

Kentucky: (Miss Roe, July 1.) A trace to 1 or 2% reported from five counties 1-15% in Logan County, 48% in McCracken County, 5% in Simpson County, and considerable in Union.

Oregon: (Barss, July 15.) Occurrence is general and as high as 7% has been found in some fields. Only Tilletia tritici has thus far been collected east of the Cascade Mountains.

Texas: (Summary of Cereal Disease Survey, May 13-June 2.) Found in 5 out of the 199 fields inspected, in amounts ranging from a trace to 2% (average .02%).

Loose smut caused by Ustilago tritici.

Alabama: (Summary of Cereal Disease Survey, May 12-28.) Found in 84 out of the 133 fields inspected, in amounts ranging from a trace to 10%. Found most frequently in Morgan County. 61% of the 93 fields of Mediterranean Blue Stem and 55% of the 9 fields of Fulcaster wheat were affected. No hot water treatments were made on the grain sown in these fields.

Arkansas: (Elliott, July 1.) Common. About 2 or 3% of total crop a loss.

Colorado: (Leach, July 15.) Very prevalent in small percentages, usually a trace to 2 or 3%. Seldom over 3 to 5%.

Delaware: (LeCato, June.) General and moderate, 3% reduction in yield for state.

Georgia: (Berry, July 1.) Occurs all over state. Loss varies from a trace to as high as 8 or 10%. Usual range is between 2 and 6%.

(Summary of Cereal Disease Survey, May 15-21.) Found in 26 fields out of the 39 inspected. Plants were affected in amounts ranging from a trace to 4% (average .8%). 68% of the 25 fields of Blue Stem and 55% of the 9 fields of May wheat were affected. Of the 2 fields out of the 39 which were treated with hot water, one had no infection and the other 1/2%.

Indiana: (Gardner, August 1.) Was widely distributed throughout the state as usual; in some cases as high as 50-70% infections were reported. Treated seed was quite free from smut, and very much interest has been aroused in hot water seed treatment.

Iowa: (Bakke, July 15.) Common throughout the state. More in the southern part of the state. First observed June 7, at Fairfield.

Oregon: (Barss, July 15.) Not general but found locally.

Texas: (Summary of Cereal Disease Survey, May 13-June 2.) Found in 138 out of the 199 fields inspected in amounts ranging from a trace to 20% (average 1.3%). 66% of the 110 fields sown with Mediterranean Blue Stem, and 66% of the 9 fields sown with Turkey Red wheat were infected. No hot water treatment.

Stem rust caused by Puccinia graminis.

Alabama: (Peltier, July 1.) Only scattering specimens of stem rust have been gathered by Dr. Ludwig in Alabama this spring.

(Summary of Cereal Disease Survey, May 12-28.) Found in 5 out of the 133 fields inspected in amounts ranging from a trace to 40% affected

leaf area (average .6%). Highest percentage found in Escambia County.

Arkansas: (Elliott, July 1.) Very little, no damage done.

Colorado: (Leach, July 15.) The disease was reported from Burlington, June 28, ranging from 1 to 2 1/2%.

Georgia: (Summary of Cereal Disease Survey, May 15-21.) Found in 16 out of the 39 fields inspected. Plants were affected in amounts ranging from 1/2 to 100% (average 16.2%). The disease was found most frequently in Mitchell County. 14% of the 25 fields of Mediterranean Blue Stem and 2% of the 9 fields of May wheat were affected.

(Berry, July 1.) 5% to 95% infection in south Georgia, but a trace in north Georgia. Last year but a trace of stem rust found in the state.

Illinois: (Anderson, July 15.) Stem rust appeared about Urbana as early as June 25, on winter wheat. There is a decided variation in the amount of stem rust, from 5 to 50%. It will probably do no damage to the winter wheat on account of the early harvest.

Kansas: (Melchers, July 15.) Occurred in all parts of the state. Some fields in southern Kansas had 50% stem rust. Many fields showed from a trace to 15% and some fields 35%. A combination of climatic conditions and stem rust will cause some shrivelling of wheat in southern Kansas.

Kentucky: (Miss Roe, July 1.) Reported from nine counties in amounts varying from a trace to 10%.

Ohio: (Van Pelt, July 15.) Reported as general near Wilmington, Dayton and Wooster, but causing only slight injury.

Oregon: (Hoerner, July 15.) Practically none in grain fields throughout state. A small amount on some varieties on College Farm at Corvallis.

Pennsylvania: (Orton, July 15.) Most prevalent in Lancaster and Franklin Counties. Some 150 A. in Lancaster County showed 40 to 85% infection and some 300 A. in Franklin County showed 40 to 100%. Considerable infection was also found in Lackawanna and Susquehanna Counties, local infection was found in four other counties. Aecial stage was observed on barberry in several counties. Barberry escaped cultivation in a number of places.

South Dakota: (Champlin, July 5.) Very slight amount locally. Observed on Turkey winter wheat.

Tennessee: (Essary, July 1.) Scattered infection in all sections coming late in season. Serious in a few localities.

Texas: (Summary of Cereal Disease Survey, May 13-June 2.) Found in 137 out of the 199 fields inspected, in amounts ranging from a trace to 85%. Found in largest amounts in Wichita County. 72% of the 110 fields of Mediterranean Blue Stem and 89% of the fields of Turkey Red wheat were affected.

Virginia: (Fromme, July 1.) No serious injury. Present to a slight extent but coming too late to damage. Heaviest infection found in Pulaski County.

West Virginia: (Giddings, July 1.) This disease has been found more prevalent than usual in the entire southern and central portions of the state. Mr. Christopher of the Office of Cereal Investigations is securing much interesting data from southwestern Virginia in regard to the stem rust and its relation to the barberry.

(Berg, July 14.) Very severe especially on later varieties of wheat in Upshur County, and also severe in Hardy and Cabell Counties.

Wisconsin: (Vaughan, July 15.) Very bad near Madison on winter wheat, coming rapidly on spring wheat.

Leaf rust caused by Puccinia triticina.

Alabama: (Peltier, July 1.) Has been more severe this season than the past three or four years. The percentage of infection ranging from 10 to 100%. On the station farm, it has ranged from 25-100% on various varieties.

(Summary of Cereal Disease Survey, May 12-28.) Found in 116 out of the 133 fields inspected, ranging from a trace to 100%. Found in all the counties but in least amounts in Macon and Talledega Counties. Both Fulcaster and Mediterranean Blue Stem are very susceptible.

Arkansas: (Elliott, July 1.) Very severe. In many localities wheat did not mature on account of the injury. 10% of the total crop lost.

Colorado: (Leach, July 15.) First reported May 30 from Fort Collins where a trace was observed. Since that date twelve other reports have been received. Amounts varied from a trace to 65% affected leaf areas.

Delaware: (LeCato, June.) General and severe, 20% reduction in yield for the state.

Georgia: (Summary of Cereal Disease Survey, May 15-21.) Found in 37 out of the 39 fields inspected. Plants were affected in amounts ranging from 10 to 100% (average 54.6%). 90% of the 25 fields of Blue Stem and 100% of the 9 fields of May wheat were infected.

(Berry, July 1.) Very common and quite destructive this season. 50% to 100% infection over the entire state.

Illinois: (Anderson, July 15.) Leaf rust of wheat was unusually bad this year. 100% of the leaves were infected and a great many leaves died early in the season. It is impossible to estimate the loss from this disease.

Indiana: (Gardner, August 1.) Quite generally distributed throughout the state. In most of the northern sections of the state the surface of the leaves at harvest were brown with rust. In the northern section of the state especially wheat on low land was most seriously affected.

Iowa: (Bakke, July 1.) General. Red Cross wheat very susceptible. In some cases as high as 90%.

Kansas: (Melchers, July 15.) Very prevalent, the worst it has been in a number of years. Seriously attacking the culms and peduncles of wheat plants. Kanred grown all over Kansas showed marked resistance. The percentage of infection for the state for Kanred on the foliage averaged about 10% and practically no culm infection.

Mississippi: (Beal, July 1.) General where wheat is grown this season. Several fields in southern Mississippi observed where leaf infection was 100%.

Missouri: (Maneval, June 2.) Leaf rust has developed to an alarming extent in Jackson and Lafayette Counties according to my own observations on this trip. It has also been reported from a number of different sources so that I am inclined to think that injury due to it will be unusually severe this season. The wheat is very tall and much of it is beginning to lodge badly.

Ohio: (Selby, July 15.) General although not severe.

Oregon: (Owens, July 15.) Very moderate infection of leaf rust is reported throughout territory west of Cascade Mountains. No apparent damage to date.

Pennsylvania: (Orton, July 15.) Prevalent in most counties, not severe except in certain localities.

South Dakota: (Champlin, July 1.) General and moderate, 5% reduction in yield estimated.

Tennessee: (Essary, July 1.) Heavy infection general over the state.

Texas: (Summary of Cereal Disease Survey, May 13-June 2.) Found in 183 out of the 199 affected fields, in amounts ranging from 1-100% (average 29.5%. Found in all the counties inspected excepting Hunt County. 91%

of the 110 fields of Mediterranean Blue Stem and 100% of the 9 fields of Turkey Red wheat were infected with rust.

Virginia: (Fromme, July 1.) 19 farmers attribute general failure of wheat in eastern and middle sections to leaf rust. Much of the wheat there will fall short of expectations from 30-50%. Just how much of this can be assigned to leaf rust is questionable, but I am inclined to think that it has been an important factor.

Wisconsin: (Vaughan, July 15.) Generally prevalent in wheat fields about Madison. Both winter and spring varieties affected.

West Virginia: (Giddings, July 1.) Quite prevalent. I believe that this disease causes appreciable injury to the wheat crop in West Virginia.

Anthracnose caused by Colletotrichum cereale.

Alabama: (Peltier, July 1.) More or less general. Little or no damage this season.

(Summary of Cereal Disease Survey, May 12-28.) Found in 56 out of the 133 fields inspected, in amounts ranging from very slight to 3%. Found in all fields inspected in Calhoun and Marshall Counties. 44% of the fields sown to Mediterranean Blue Stem and 78% of the fields sown to Fulcaster were affected.

Delaware: (LeCato, June.) General and causing moderate damage.

Iowa: (Bakke, July 15.) Common, but is believed not to be doing serious damage. First reported from Donaldson, June 16.

Kentucky: (Miss Roe, July 1.) Reported in slight amounts from Anderson, Fayette, Livingston, Logan, Simpson and Trigg Counties; 4-5% from Calloway and Fulton; 18% from Union and abundant in Hickman.

Ohio: (Detmers, July 15.) Present in Experiment Station plots in moderate amounts. Not advised as to general occurrence in state.

Texas: (Summary of Cereal Disease Survey, May 13-June 2.) Found in 35 out of the 199 fields inspected, in amounts ranging from very slight to very abundant. Found most abundantly in Lampasas County. 22% of the 110 fields of Mediterranean Blue Stem were affected and none of the 9 fields of Turkey Red Wheat.

Glume spot and leaf spot caused by Septoria glumarum and S. graminis.

Alabama: (Peltier, July 1.) General throughout the state. Ranging in severity from very slight to bad.

(Summary of Cereal Disease Survey, May 12-28.) Found in 95 out of the 133 fields, in amounts ranging from very slight to 40%. Found most frequently and in greatest amounts in Chilton and Walker Counties. 76% of the 93 fields sown to Mediterranean Blue Stem and 44% of those sown to Fulcaster were affected.

Georgia: (Summary of Cereal Disease Survey, May 15-21.) Found in 8 fields out of the 39 inspected, ranging in amounts from very slight to very abundant. Found most frequently in Carroll County. 2% of the 25 fields of Blue Stem and 2% of the 9 fields of May wheat were affected.

Indiana: (Gardner, August 1.) Septoria leaf spot was widely distributed throughout the state, almost no fields being free from it. In few cases however did it seriously reduce the yield.

Septoria of the glumes was observed in many fields at harvest time. It was associated with septoria leaf spot.

Iowa: (Bakke, July 1.) Found to a high percentage on winter wheat at Agronomy farm.

Very common early in the spring. By this time it has worked up the stems to the upper leaves. Trace on glumes.

Kansas: (Melchers, July 15.) On the glumes caused injury in some fields. Low spots and lodged wheat had worst infection. Although not as widely spread and black chaff, the injury was just as severe in many fields.
Kentucky: (Miss Roe, July 1.) Reported as more or less abundant but with little damage in fourteen counties. One case of 95% in Logan County.
Ohio: (Selby) Glume spot, caused by Septoria spp., is rather prevalent at the Station in Ohio. No serious damage. Appears to be quite general over the state.

Leaf spot, caused by Septoria spp., is reported as general and moderately severe during the late spring over the southwestern and central portions of Ohio. Also noticed at the Experiment Station.

Pennsylvania: (Orton, July 15.) Generally prevalent and in some cases quite severe and associated with poor yields, but cause not certain.
Texas: (Summary of Cereal Disease Survey, May 13-June 2.) Found in 48 out of the 199 fields inspected in amounts ranging from very slight to abundant. Found most frequently in Cooke, Collin, Coryell and Grayson Counties. 22% of the Mediterranean Blue Stem fields were affected and none of the Turkey Red.
Virginia: (Fromme, July 1.) Farmers were considerably alarmed by the unusual development of Septoria on heads. There were traces of this all over the state, but greatest development occurred in the belt marked by Greensville, Henrico and Caroline Counties. Losses ascribed to this probably accounted for by leaf rust, anthracnose, joint worm and hessian fly.
West Virginia: (Giddings, July 1.) Quite a little Septoria infection has been observed in many fields.

Black chaff caused by Bacterium sp.

Arkansas: (Elliott, July 1.) Present in most fields. No evidence of injury.
Colorado: (Leach, July 15.) Reported as very slight from Holly and considerable from Rocky Ford.
Iowa: (Bakke, July 1.) Common on winter wheat. First observed in Kossuth, June 14.
Kansas: (Melchers, July 15.) Common in most fields. Present in only traces in many fields. Low spots had often times quite serious infection. Not as common or serious as in 1915.
Texas: (Summary of Cereal Disease Survey, May 13-June 2.) Found in 5 out of the 199 fields inspected in amounts ranging from slight to abundant.
Wisconsin: (Vaughan, July 15.) Prevalent on station plots of Kansas grown wheat. No reports from outside.

Other diseases.

Nematode injury, caused by Tylenchus tritici, is reported as present in Jackson County, north Georgia where it is limited to an area of 100 square miles. Infection runs from 1-100%. But one field which is a total loss.

Mildew, caused by Erysiphe graminis, is reported from West Virginig as unusually prevalent, and having caused some little injury in many wheat fields this year.

Ergot, caused by Claviceps purpurea, is reported from one field in Rock County, Wisconsin. 2% infection.

Stripe rust, caused by Puccinia glumarum, is reported by Owens July 15 as abundant on grasses, especially Elymus, throughout territory west of Cascades in Oregon. Has been reported as far east as Union County. Occurs on susceptible varieties of wheat such as Little Club, Jones Winter Fife, and

slightly on Turkey. Absence of rust on wheat growing in close proximity to infested grasses in some localities due to fact that wheat happens to be resistant variety. Very severe outbreak on susceptible varieties on Experiment Station grounds.

Freezing injury did a great deal of damage to Indiana wheat early in the spring. Much of this wheat did not recover and there was quite a reduction in yield.

Take-all (cause not definitely determined.)

American plant pathologists are already fairly well acquainted with the situation existing in the United States regarding take-all of wheat. The following account is given however in order that the subject may be recorded in the Plant Disease Bulletin.

About the middle of April 1919 a destructive wheat disease was noticed by the county agent of Madison County, Illinois and reported by him to the Illinois Agricultural Experiment Station, and also to the United States Department of Agriculture. After a conference with the Illinois authorities, an examination of the affected fields was made April 21 by A. G. Johnson of the Office of Cereal Disease Investigations. The examination showed the disease to be very similar to, if not idenitcal with, the take-all that has been known for many years in Australia and Europe. Whether or not it was the same as the disease in these countries of course could not be determined definitely at that time, and even at the present writing the matter has not yet been fully settled.

Immediately steps were taken to begin a study of the cause of the disease and Mr. H. H. McKinney of the Office of Cereal Disease Investigations was assigned to the work, with headquarters at St. Louis, Missouri. At the same time arrangements were made to bring together in conference as large a number of pathologists as possible in order to acquaint them with take-all by personal inspection of the Illinois fields. A number of men engaged in the cereal disease survey of the Department of Agriculture were called together at St. Louis on May 5. Immediately on entering the fields the Australian flag smut, caused by Urocystis tritici, was discovered by Mr. Dixon. This smut was not developed sufficiently to be seen at the time of the first inspection of these fields. The finding of flag smut added great weight to the belief that the take-all disease was the same as that occurring in Australia, as both flag smut and take-all are very prevalent in Australia and the smut is only known in that section of the world. Although, of course, it will be necessary to discover a common causal organism before it can be proven that the two take-all diseases are identical, still the finding of flag smut in the same fields with take-all is very good circumstantial evidence that the take-all in the United States is similar to that of Australia.

After inspecting the affected fields in Madison County the cereal disease survey men separated and went to various states to make a survey for cereal diseases, with particular reference to smuts. This survey extended all over the eastern half of the United States, and during the course of the season the men inspected a great many fields in widely separated and representative parts of the country. In all their survey work they were on the constant look-out for the newly discovered take-all and flag smut.

On May 12 a still larger group of plant pathologists and agronomists were assembled at St. Louis to get first hand knowledge of these diseases. Representatives were present from the following states; New York, Pennsylvania, Virginia, Kentucky, South Carolina, Georgia, Alabama, Arkansas, Oklahoma, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, North

Dakota, South Dakota and Kansas. Pathologists from Iowa, Nebraska, Maryland, West Virginia and Delaware also had the opportunity to view the affected fields in Illinois at about the same time. The report of this meeting has been made available in mimeographed form. On their return to their respective states these men at once instituted a search for the disease. In addition to this in many states considerable publicity was given to the troubles, newspaper articles were written and circular letters, etc. were sent around to county agents and other persons. In Illinois and Indiana meetings of county agents were held to view the affected fields. As a result of this publicity work and travel a great many suspected reports were received in the various states, but on being followed proved to be something other than take-all or flag smut.

Geographical Distribution.

During the entire season the disease has been found only in the two states of Indiana and Illinois. Its present known geographical distribution is as follows: Illinois - Mason County, Madison County, Sangamon County; Indiana - Porter County, Laporte County and Tippecanoe County. The Indiana occurrences were reported early, immediately after the discovery in Madison County. It seems that farmers in the two northern Indiana counties discovered that something was the matter with their wheat and reported it to the County Agent. At about that time the county agents received word from the Agricultural Experiment Station of the discovery of the new take-all disease and at once informed the Station of the situation in their counties. An examination of the fields showed it to be the same disease that occurred in Madison County. Because of the publicity that has been given take-all and because of the wide search that has been made for it, it is probable that the disease is still quite limited in its range. It is believed at least that the more important areas have already been located.

The following summary shows the number and acreage of affected fields in Indiana and Illinois and also the percentage of take-all in the fields.

Table 10. Summary of the occurrence of take-all of wheat in the United States, 1919.

COUNTY	NO. OF FIELDS INFESTED	ACREAGE OF INFESTED FIELDS	% OF TAKE-ALL IN INFESTED FIELDS		
			MINIMUM	MAXIMUM	AVERAGE
ILLINOIS					
Madison	29	629	One plant in 20 A.	85	5-10
Mason	48	1310.5	t	70	9.2
Sangamon	2	380	t	5	2.5
INDIANA					
Porter	6	120	t	65	10
Laporte	5	150	t	t	t
Tippecanoe	1	5			t

Fig. 1. Map of Illinois and Indiana showing the approximate location of the six counties where take-all of wheat has been found.

Symptoms.

The symptoms of take-all in the United States vary in different fields. In some fields distinct patches of dwarfed, sickly, or dead plants occur. These patches vary greatly in outline and size, from a few feet across to several acres in extent. In other fields the entire area is involved, so that patches are not evident. Badly affected plants are much dwarfed and remain in the rosette stage instead of shooting up and forming heads. When such plants are pulled, they often break near the crown, leaving the roots in the ground. An examination shows that the crown and base of the stalks are badly rotted.

The leaves of plants affected with take-all are usually of a bluish-green color in marked contrast with the normally green leaves of healthy plants. This difference in leaf color is very characteristic and is helpful in recognizing the disease. Affected plants, in an attempt to recover, often send up new shoots which are weak and slender and remain short. In Europe and Australia take-all is distinguished in its later stages by what is termed "white-heads". That is, some of the plants are not affected badly enough to be dwarfed or killed in the early or seedling stage. Such plants may head out, but the head produces no grain and soon becomes white and dead.

Exclusion and Eradication Measures.

Already the Federal Horticultural Board has placed a quarantine on the importation into the United States of rice, wheat, oats, barley and rye from Australia, India, Japan, Italy, France, Germany, Belgium, Great Britian, Ire-

land and Brazil. This quarantine is to be effective August 15, 1919. This action will tend to prevent the introduction of any more of the two diseases. The problem then is one of control of the areas where the disease now occurs. This is being taken care of by the Indiana and Illinois state departments of agriculture cooperating with the Federal Department of Agriculture.